

FIG. 1: Method A

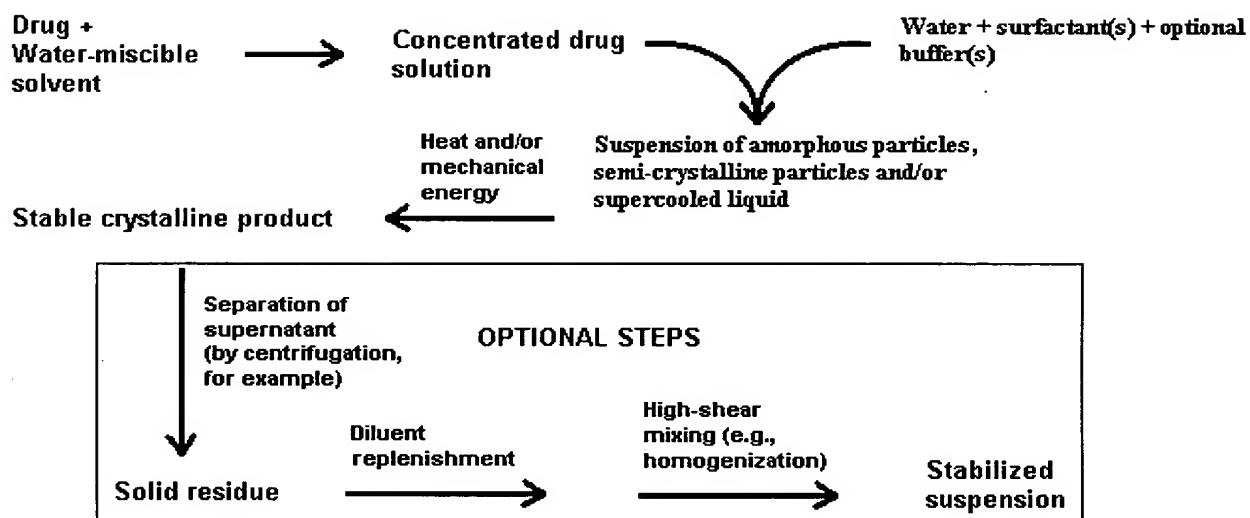


FIG. 2: Method B

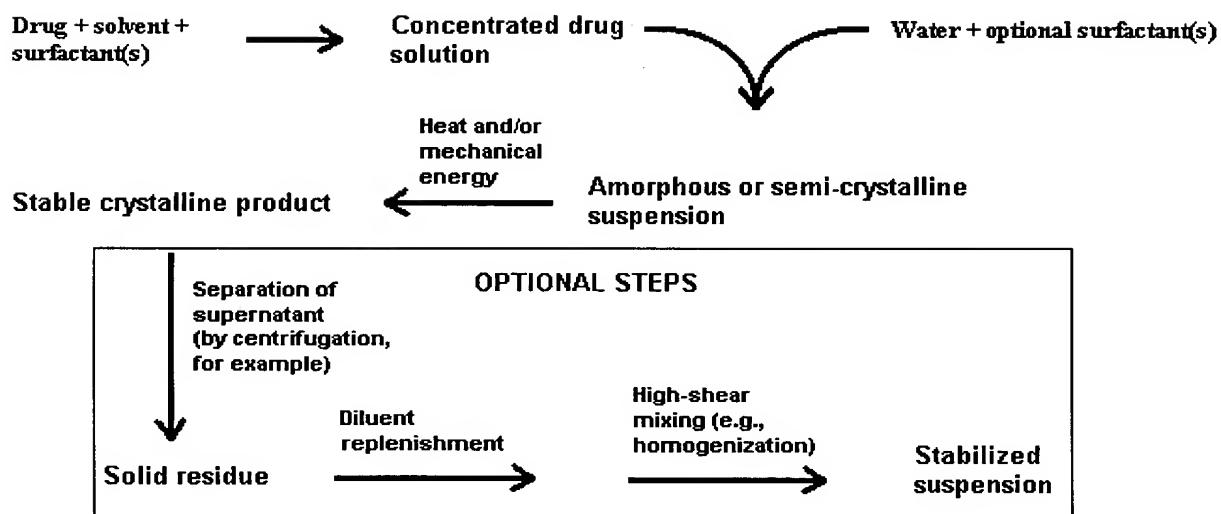


FIG. 3: Amorphous particles prior to homogenization (Example 1).

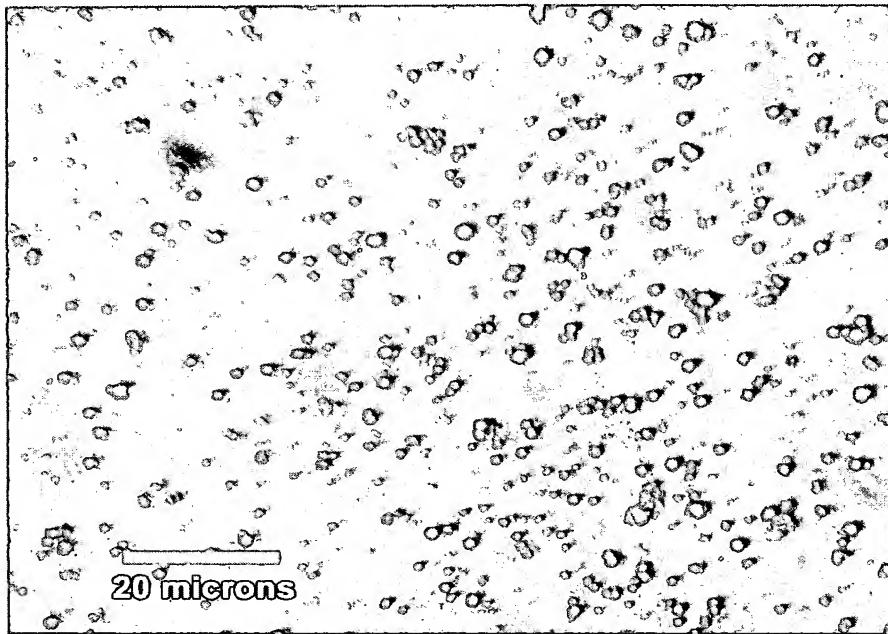


FIG. 4: Particles after annealing by homogenization.

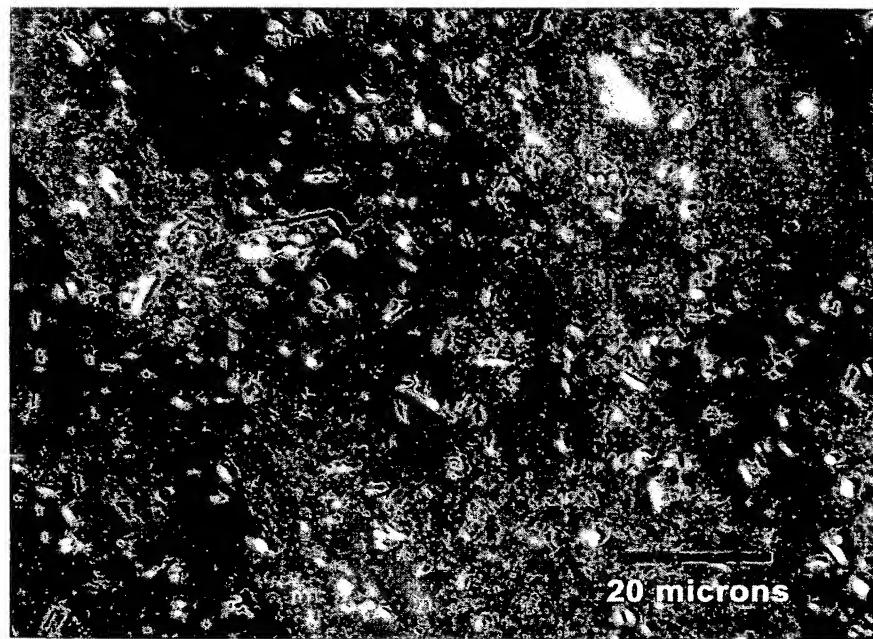


FIG. 5: X-Ray diffractogram of microprecipitated itraconazole with polyethylene glycol-660 12-hydroxystearate before and after homogenization (Example 5).

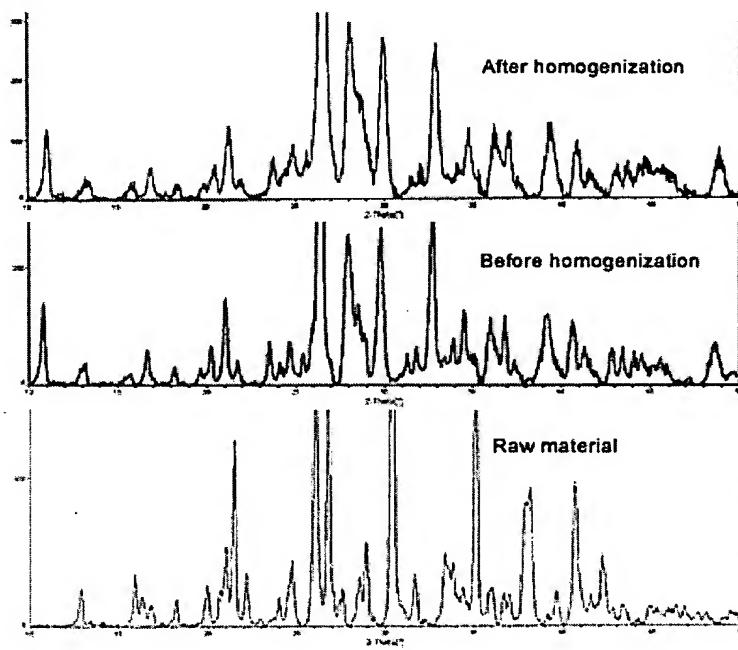


FIG. 6: Carbamazepine crystals before homogenization (Example 6).

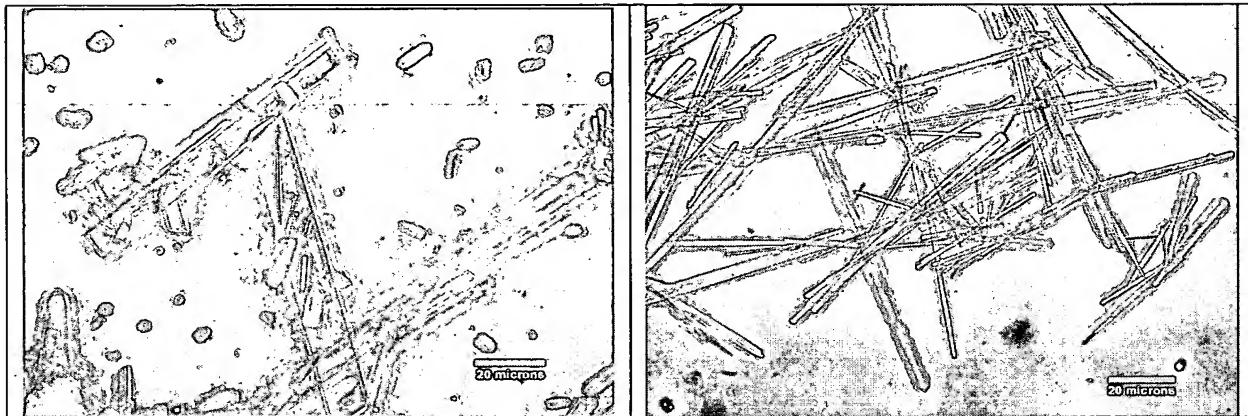


FIG. 7: Carbamazepine microparticulate after homogenization (Avestin C-50)

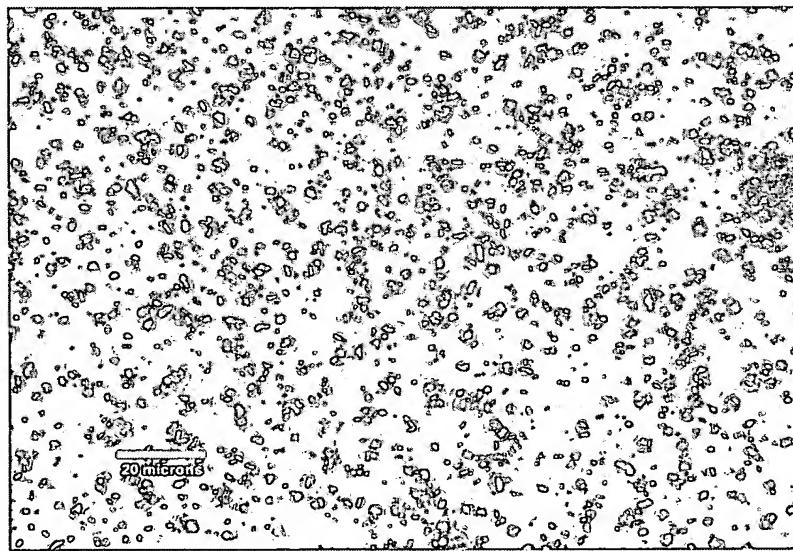


FIG. 8: Diagram of Microprecipitation Process for Prednisolone (Examples 9-12)

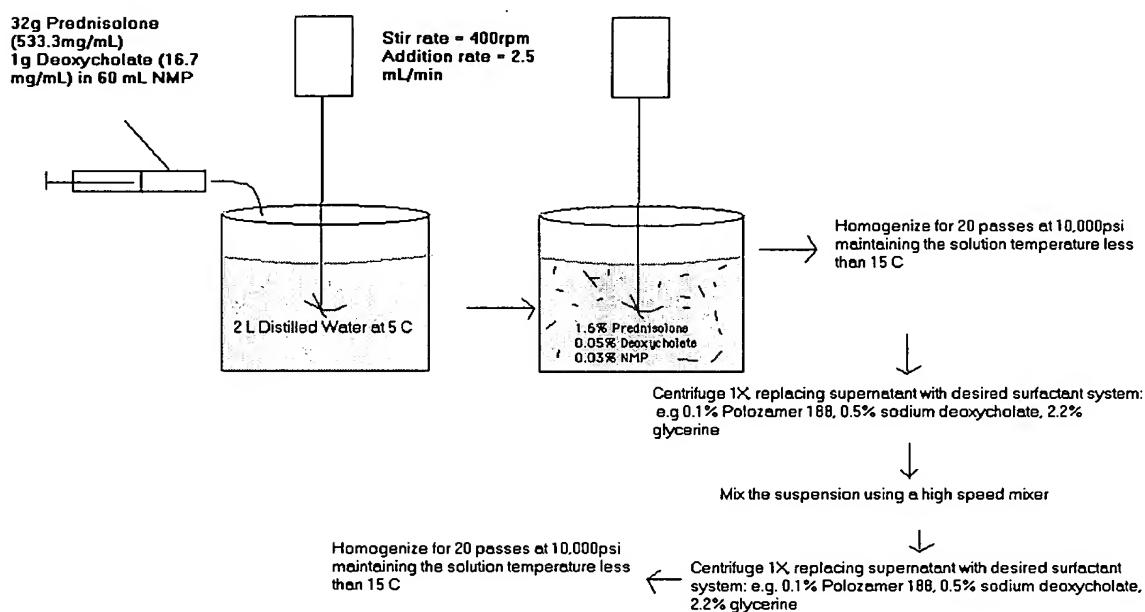


FIG. 9: Photomicrograph of prednisolone suspension before homogenization
(Hoffman Modulation Contrast, 1250X magnification)



FIG. 10: Photomicrograph of prednisolone suspension after homogenization (Hoffman Modulation Contrast, 1250X magnification).

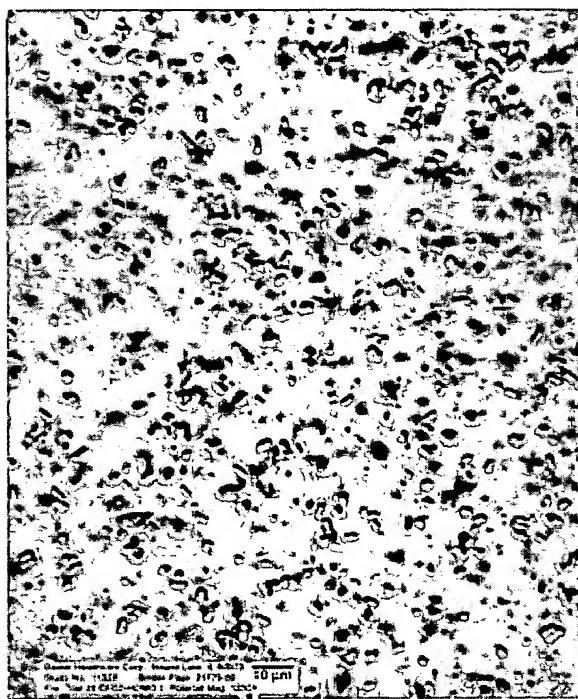


FIG. 11: Comparison of size distributions of nanosuspensions (this invention) and commercial fat emulsion. (Example 13)

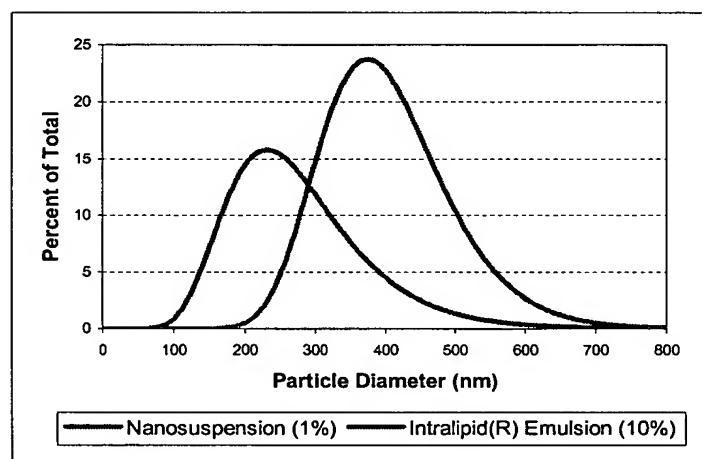


FIG. 12: X-ray powder diffraction patterns for raw material itraconazole (top) and SMP-2-PRE (bottom).

The raw material pattern has been shifted upward for clarity. (Example 16)

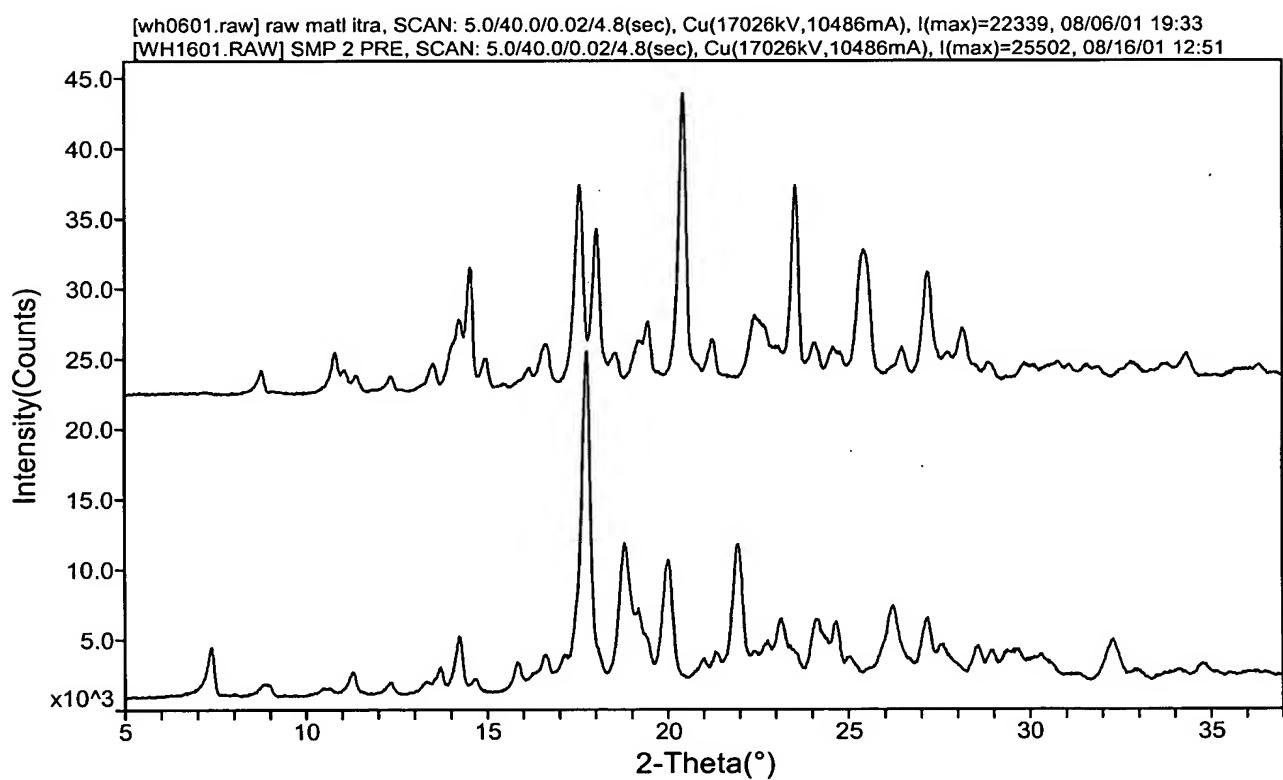


FIG. 13a: DSC trace for raw material itraconazole (Example 16)

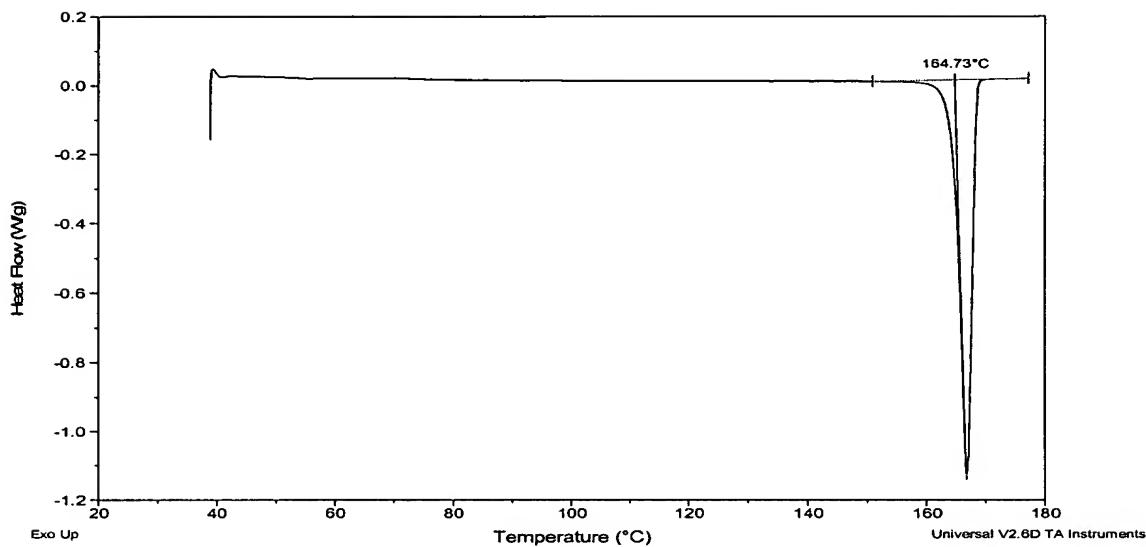


FIG. 13b: DSC trace for SMP-2-PRE. (Example 16)

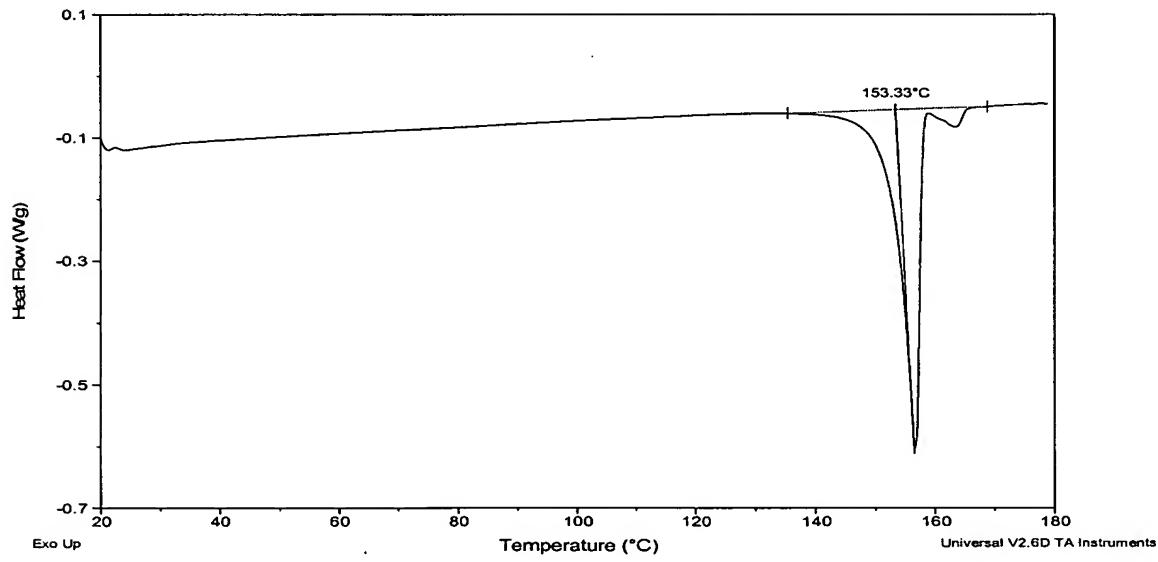


FIG. 14: DSC trace for SMP-2-PRE showing the melt of the less stable polymorph upon heating to 160 °C, a recrystallization event upon cooling, and the subsequent melting of the more stable polymorph upon reheating to 180 °C. (Example 16)

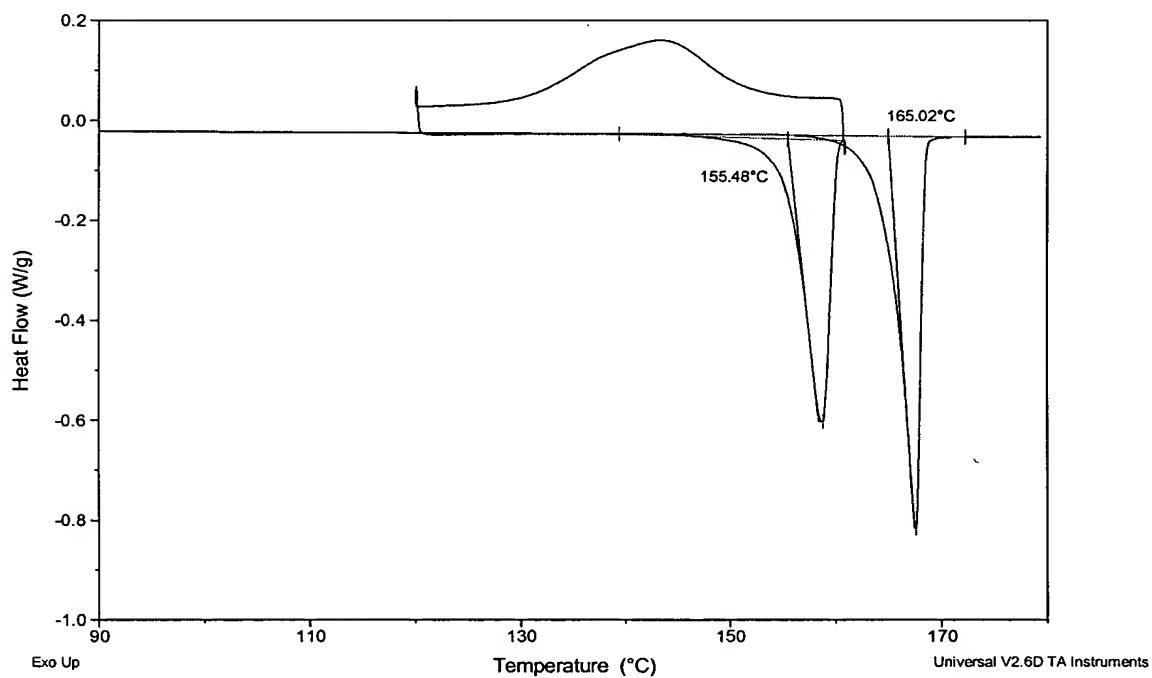


FIG. 15: Comparison of SMP-2-PRE samples after homogenization. Solid line = sample seeded with raw material itraconazole. Dashed line = unseeded sample. The solid line has been shifted by 1 W/g for clarity (Example 16)

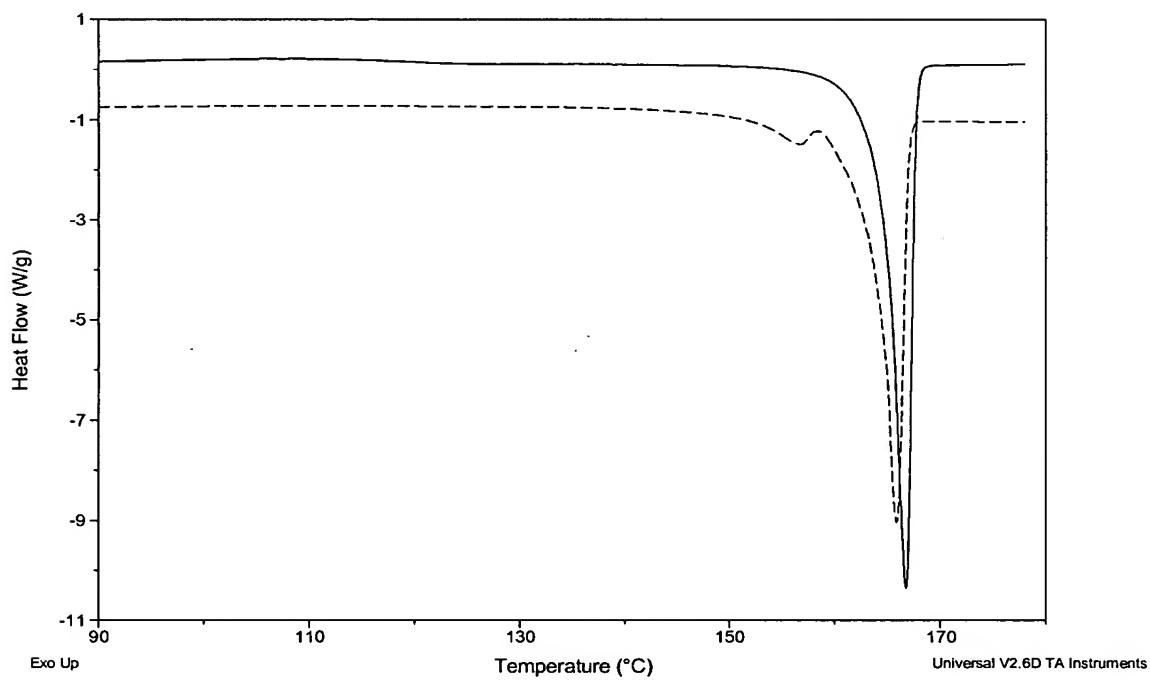


FIG. 16: Effect of seeding during precipitation. Dashed line = unseeded sample, solid line = sample seeded with raw material itraconazole. The unseeded trace (dashed line) has been shifted upward by 1.5 W/g for clarity. (Example 17)

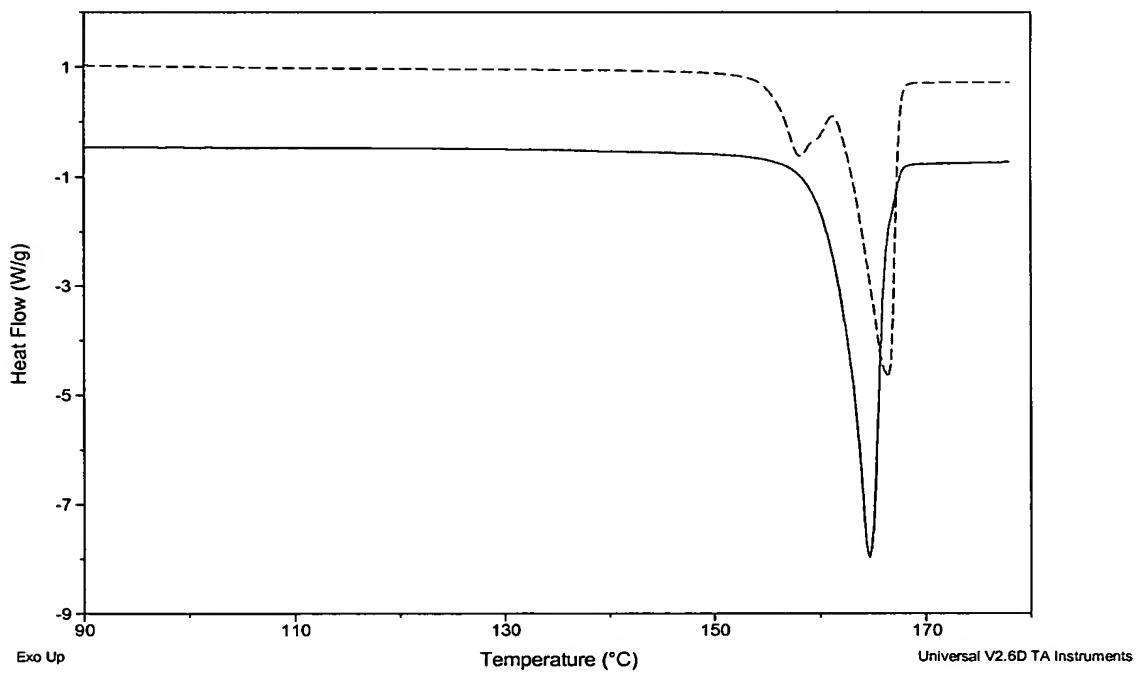


FIG. 17: Effect of seeding the drug concentrate through aging. Top x-ray diffraction pattern is for crystals prepared from fresh drug concentrate, and is consistent with the stable polymorph (see FIG. 12, top). Bottom pattern is for crystals prepared from aged (seeded) drug concentrate, and is consistent with the metastable polymorph (see FIG. 12, bottom).

The top pattern has been shifted upward for clarity. (Example 18)

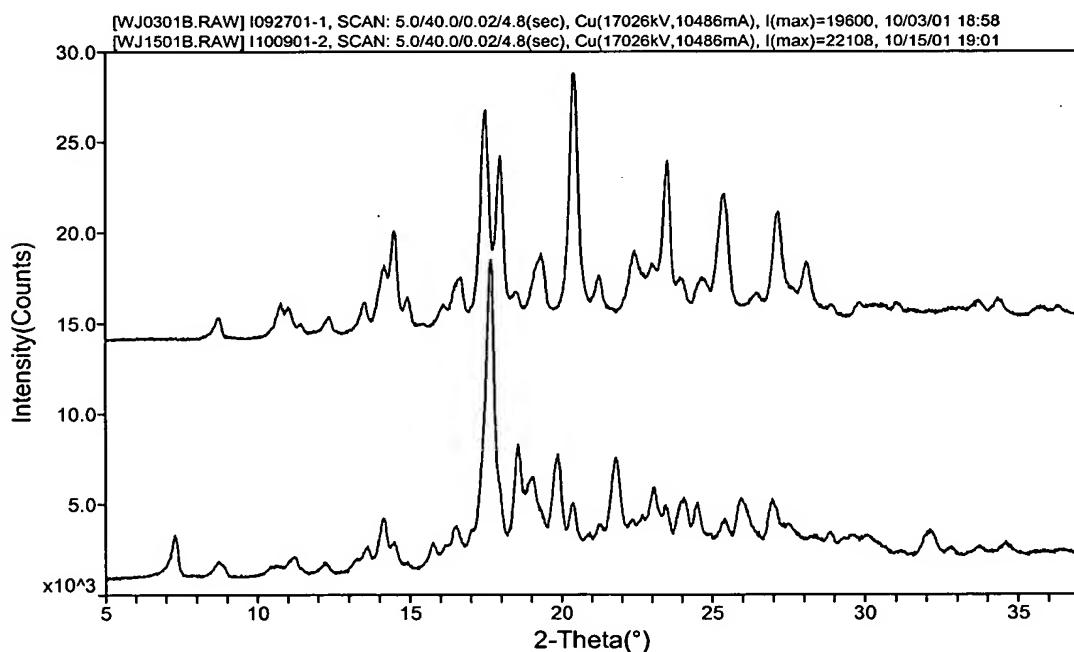
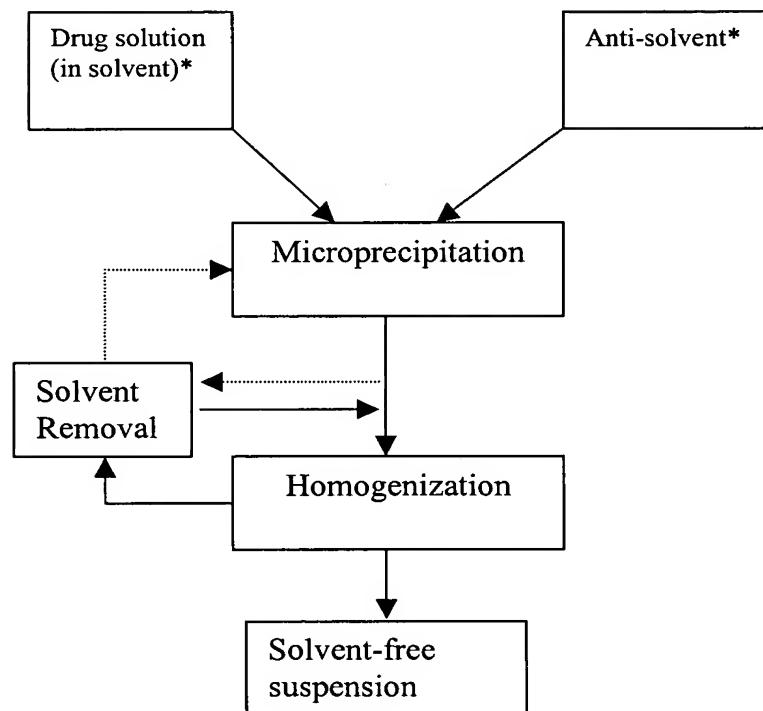


FIG. 18: A schematic diagram illustrating the combined and continuous solvent removal process for producing an aqueous suspension of small particles which is essentially solvent free



* Optional surfactants/excipients

FIG. 19: A schematic diagram illustrating a continuous solvent removal process for producing an aqueous suspension of small particles which is essentially solvent free using a cross-flow filtration

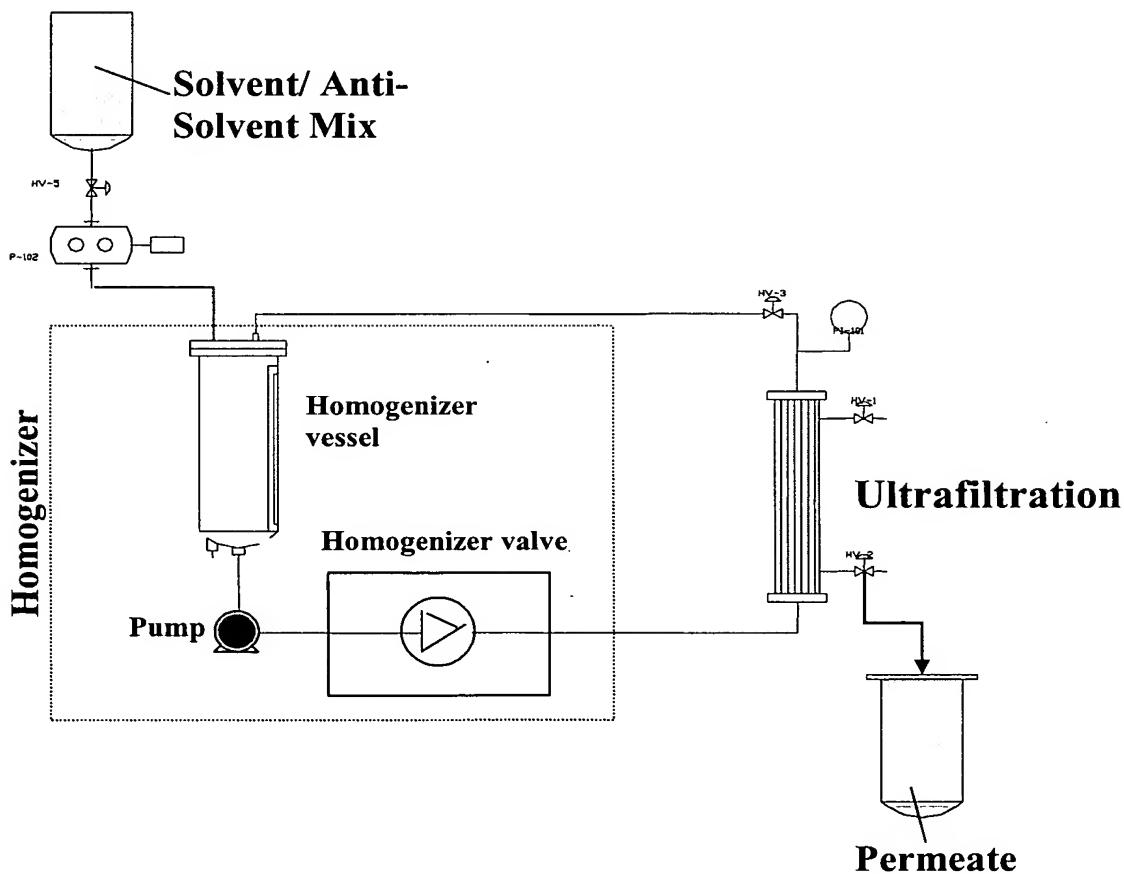


FIG. 20: A schematic diagram illustrating a continuous solvent removal process for producing an aqueous suspension of small particles of itraconazole which is essentially solvent free

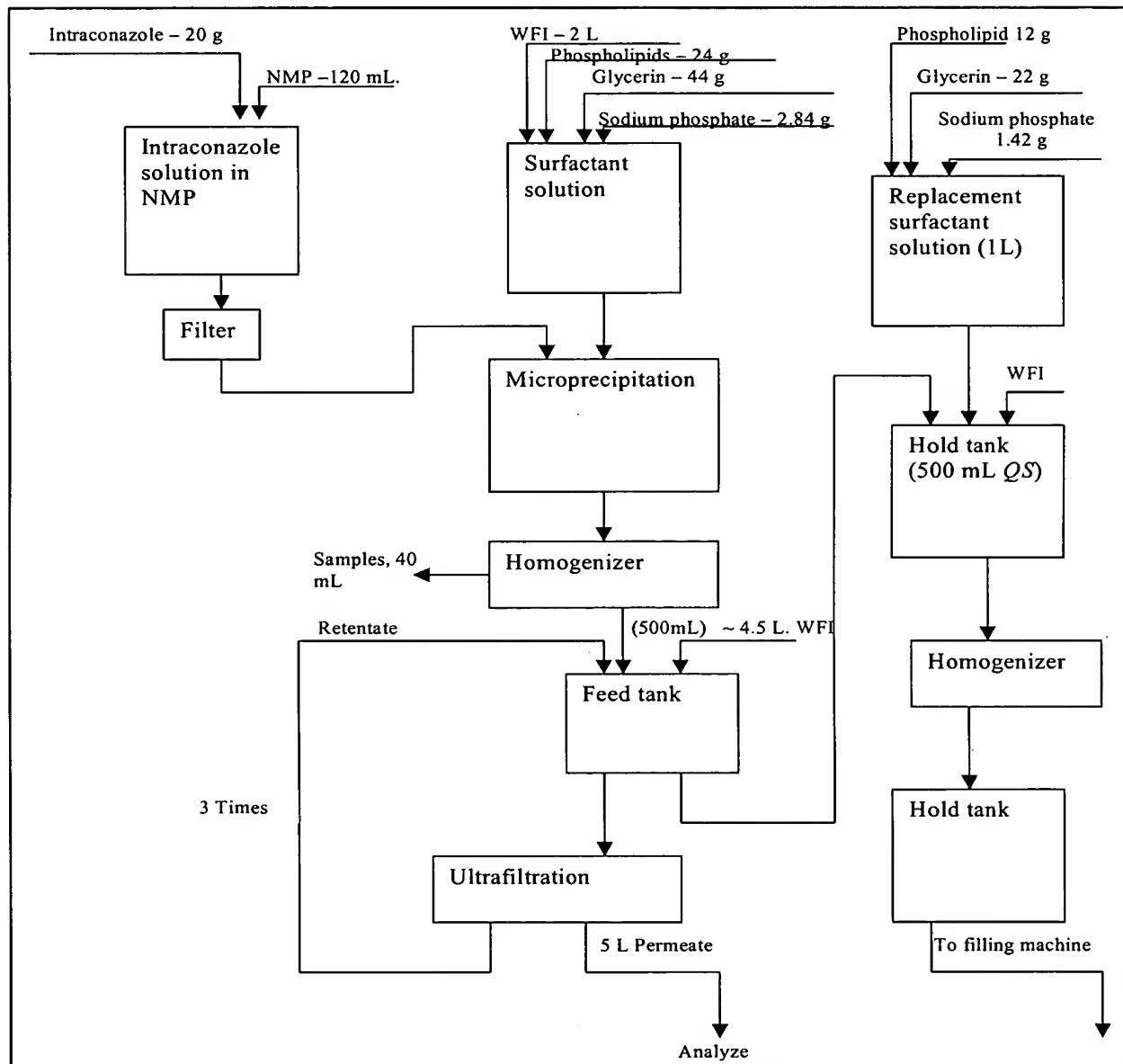
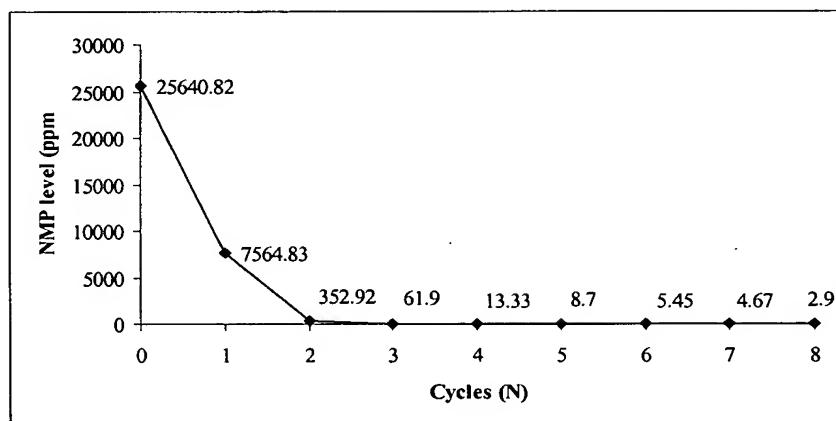


FIG. 21: NMP Removal in Scale Up of the Process described in Example 19

200 mL batch



10 L batch

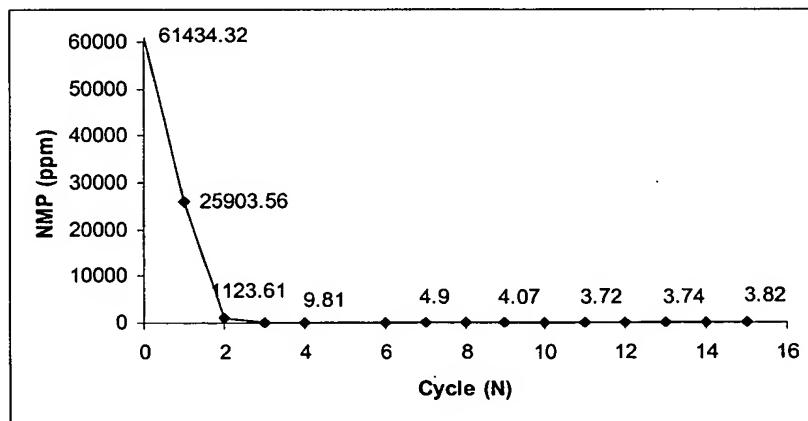


FIG. 22: Schematic Diagram of A Combined, Continuous Process for Producing Aqueous Suspension of Small Particles Substantially Free of Solvent

